UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/597,642	08/02/2006	**Uzi Landau**	7640-X06-062	4305

27317 7590 05/05/2011

Fleit Gibbons Gutman Bongini & Bianco PL
21355 EAST DIXIE HIGHWAY
SUITE 115
MIAMI, FL 33180

EXAMINER
KIM, HEE-YONG

ART UNIT	PAPER NUMBER
2482	

MAIL DATE	DELIVERY MODE
05/05/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/597,642	LANDAU, UZI	
	Examiner	Art Unit	
	HEE-YONG KIM	2482	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *02 August 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5 and 7* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5 and 7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 August 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☒ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/2/2006, 6/24/2008, 6/24/2008 and 7/29/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. It is noted that this application appears to benefit foreign priority "ISRAEL-160265" through 371 national stage of international application. However this foreign priority document has not been received. Appropriate action is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. **Claims 1-2, 4 and 7** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaman (US 5,231,401) in view of Pepin (US 6,320,611), hereafter referenced as Kaman and Pepin respectively.

Regarding **claim 1**, Kaman discloses Method and Device for Air-Ground Recognition for Optoelectronic Equipment. Kaman specifically discloses an airborne long-range (remote detection, column I, line 13) laser imaging system (airborne imaging lidar, abstract), for obtaining an image showing high resolution details of a specific object having dimensions in the order of several meters (mines, drug-carrying containers, col.1, line 17-30), comprising:

a. A laser source and a focal plane array sensing detector (lasers and cameras, column

4, lines 29-31), both being mounted on a same gimbals platform (gimbaled point, col.4, line 68);

b. A pulse generator (pulsed laser, col.2, line 27) for providing a series of pulses to said laser source during a step-scanning period, thereby activating laser illumination by said laser source during each of said pulses, the laser source being characterized in that the width of the illumination beam is in the range of 0.1mrad to 0.4mrad (examiner interprets that the width of the beam is a design parameter to resolve the image at the desired distance) so that it produces an illumination spot that covers only a portion of said object (scan relatively narrow IFOV over a much larger field of regard, col.2, line 63-69) having dimensions of up to several meters and located at a long range;

c. A scanning unit (optical scanner, col.2, line 30) for receiving a line of sight direction (line of sight, Fig.3) to said object, and for providing to the gimbals a scanning signal for effecting a stepping image capturing sequence (scanning mirror is stepped between each laser pulse, col. 3, line 1-7) in such a manner as to scan the object and the area in which said object is included (so that slightly overlapping pictures are obtained, col. 3, line 1-7), wherein said area having dimensions in the order of up to a few tens of meters(col. 4, line 17: a moored mine is included in an area of up to a few tens of meters);

d. A motion compensation unit for providing to said gimbals, in addition to said scanning signal a motion compensation signal (computer monitoring of aircraft attitude signal (pitch, roll and heading), col.4, line 62-64) for compensating for the aircraft motion and for the aircraft vibrations (Deviation from the desired pitch, roll and course of

sensor data are then compensated by the computer adjusting, col.4, line 62-66);

e. A timing unit for:

I. Activating, in coordination with the said scanning unit, said pulse generator during the scanning period, in order to produce over the target a plurality of illumination spots, each relating to one of said laser pulses, and wherein each of said spots overlaps at least a portion of one or more adjacent spots (scanning mirror is stepped between each laser pulse so that slightly overlapping pictures are obtained, col. 3, line 1-7); and

ii. Activating in a non-gated manner said focal plan array sensing detector during the illumination of the target by each specific pulse in order to capture a plurality of distinct spot-images, each relating to a single illumination pulse (programmable delay generators individually controlling timing of exposures of cameras, col.8 lines 62- 67);

f. A memory unit for receiving from said focal plane array sensing detector the captured spot-images, and for storing them (RAM and Disc Memories 100, Fig. 4).

However Kaman fails to disclose (g). A correlating unit for correlating images stored in said memory by finding similarity between features of overlapping portions of neigh boring spot-images; and (h). A combining unit receiving information from said correlating unit for combining the spot-images to form a complete image of the scanned area.

In the similar field of endeavor, Pepin discloses Method and Device for Air-Ground Recognition for Optoelectronic Equipment. Pepin specifically discloses (g). A correlating unit (Correlation Processor 53, Fig.5) for correlating images (image memory 51 and 52, Fig.5) stored in said memory by finding similarity between features of

overlapping portions of neigh boring spot-images; and (h). A combining unit (Reconstruction Processor 40, Fig.5) receiving information from said correlating unit for combining the spot-images to form a complete image of the scanned area, in order to provide a combined panoramic view from scanned patched images (col.2, line 44-59).

Therefore, given this teaching, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Kaman by providing specifically reconstructing a combined image from the scanned spot-images based on correlation, in order to provide a combined complete view from scanned spot- images. The Kaman LIDAR system, incorporating the Pepin reconstructing a combined image from the scanned spot-images based on correlation, has all the features of claim 1.

Regarding **claim 2**, Kaman and Pepin disclose everything claimed as above (see claim 1). However, Kamen and Pepin are silent on wherein the degree of overlap is determined by the speed of scanning movement, and by the rate of the series of pulses generated by the pulse generator.

However, Kamen discloses that scanning mirror is stepped between each laser pulse so that slightly overlapping pictures are obtained (col. 3, line 1-7).

Therefore, given this teaching, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Kaman and Pepin by providing specifically determining the speed of scanning movement based on pulse rate and a specific degree of overlap, in order to provide the specific overlap between consecutive pulses. The Kaman LIDAR system, incorporating the Pepin reconstructing a combined image from the scanned spot-images based on correlation, further incorporating

determining the speed of scanning movement based on pulse rate and a specific degree of overlap, has all the features of claim 2.

Regarding **claim 4**, Kaman and Pepin disclose everything claimed as above (see claim 1). In addition, Kamen teaches wherein the gimbals receive a direction signal (line of sight, Fig.3) to the object from an object locating unit, and motion compensation signal (Deviation from the desired pitch, roll and course of sensor data are then compensated by the computer adjusting, col.4, line 62-66) from a motion compensation unit.

Regarding **claim 7**, Kaman and Pepin disclose everything claimed as above (see claim 1). In addition, Kamen teaches wherein the rate of overlap between adjacent spots is in the range of 10%- 30% (the amount of overlapping is a deign parameter).

4. **Claims 3, and 5** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaman in view of Pepin, further in view of McIntyre (5,589,905) (hereafter referenced as McIntyre).

Regarding **claim 3**, Kaman and Pepin disclose everything claimed as above (see claim 1). However, Kaman and Pepin fail to disclose wherein the amount of overlapping between spots is inversely proportional to the distance from the object.

In the similar field of endeavor, McIntire discloses Camera with Illuminating Source. McIntire specifically discloses that scan rate is inversely proportional to the range to the distance to the object (distance-scan ratio is a generally inversely

proportional one, col.5, line 30-36), in order to provide equal brightness on an object regardless of distance to the object (col.5, line 36-40).

Therefore, given this teaching, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Kaman and Pepin by providing specifically scanning step inversely proportional to the range to the distance to the object, in order to provide equal brightness on an object regardless of distance to the object. Since scanning step is inversely proportional to the distance to the object, so is the amount of overlapping between spots. The Kaman LIDAR system, incorporating the Pepin reconstructing a combined image from the scanned spot-images based on correlation, and further incorporating the McIntire scanning step inversely proportional to the range to the distance to the object, has all the features of claim 3.

Regarding **claim 3**, Kaman and Pepin disclose everything claimed as above (see claim 1). However, Kaman and Pepin fail to disclose wherein the size of the scanning steps is made inversely proportional to the range to the object.

McIntire specifically discloses wherein the size of the scanning steps is made inversely proportional to the range to the object (distance-scan ratio is a generally inversely proportional one, col.5, line 30-36), in order to provide equal brightness on an object regardless of distance to the object (col.5, line 36-40).

Therefore, given this teaching, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Kaman and Pepin by providing specifically scanning step inversely proportional to the range to the distance to the object, in order to provide equal brightness on an object regardless of distance to the

object. The Kaman LIDAR system, incorporating the Pepin reconstructing a combined image from the scanned spot-images based on correlation, and further incorporating the McIntire scanning step inversely proportional to the range to the distance to the object, has all the features of claim 5.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Westell (US 5,028,998) discloses Electronic Zoom for Wide-Angle Line Scanners.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to HEE-YONG KIM whose telephone number is (571)270-3669. The examiner can normally be reached on Monday-Thursday, 8:00am-5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Kelley can be reached on 571-272-7331. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/HEE-YONG KIM/
Examiner, Art Unit 2482

/Christopher Kelley/
Supervisory Patent Examiner, Art Unit 2424